

Figure 1

| | | | | |
|---------------|---------------------------------------|------|------|------|
| | 1264 | 1274 | 1284 | 1294 |
| | | | | |
| gp120 422-432 | CAAAATTATAAAACATGTGGCAGAAAAAGTAGGAAAA | | | |
| | | | | |
| rv_85283 | CAAAATTAAAAAAGCTTTTAAAGAAAAAGTAGGAAAA | | | |

Figure 2

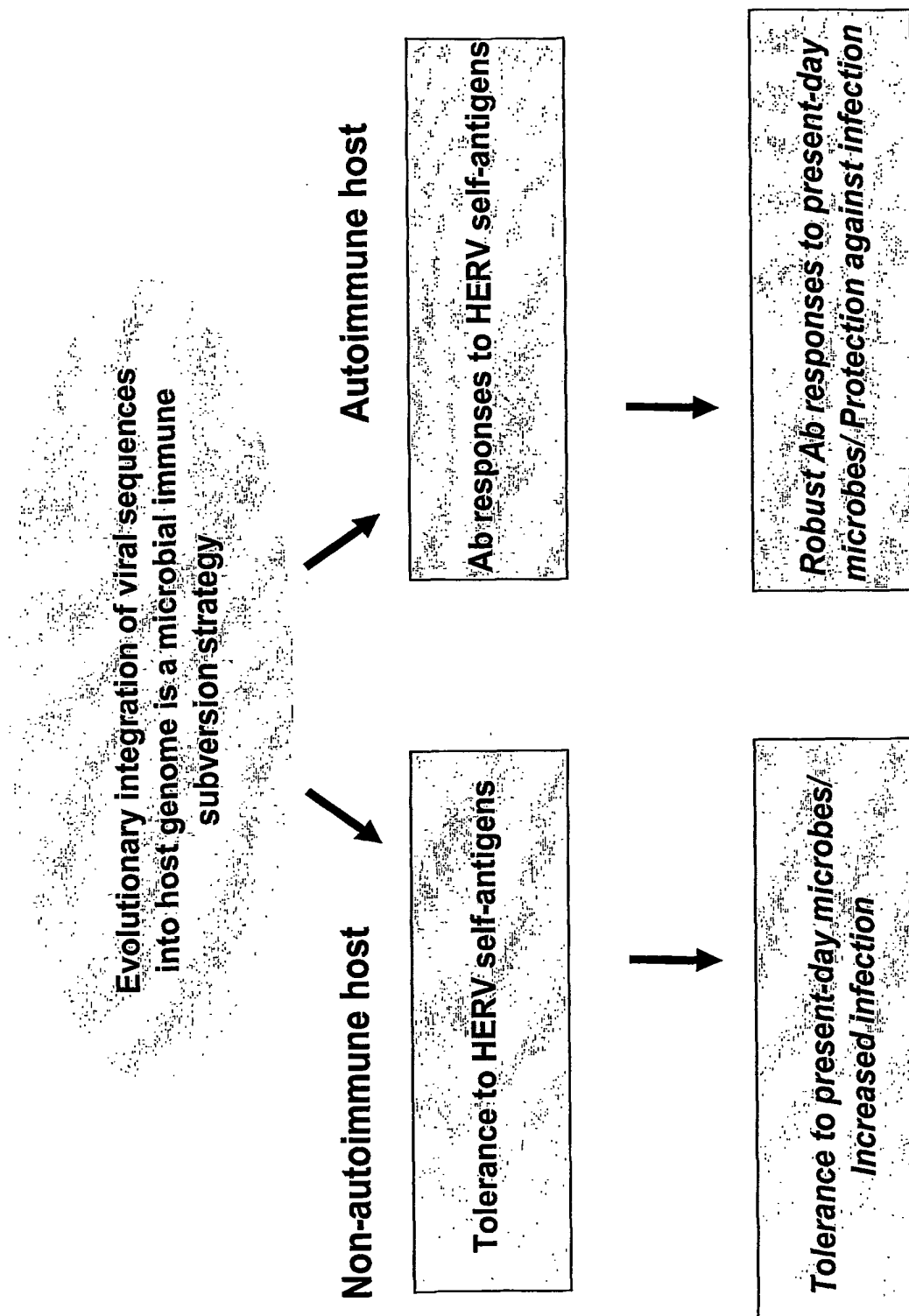


Figure 3

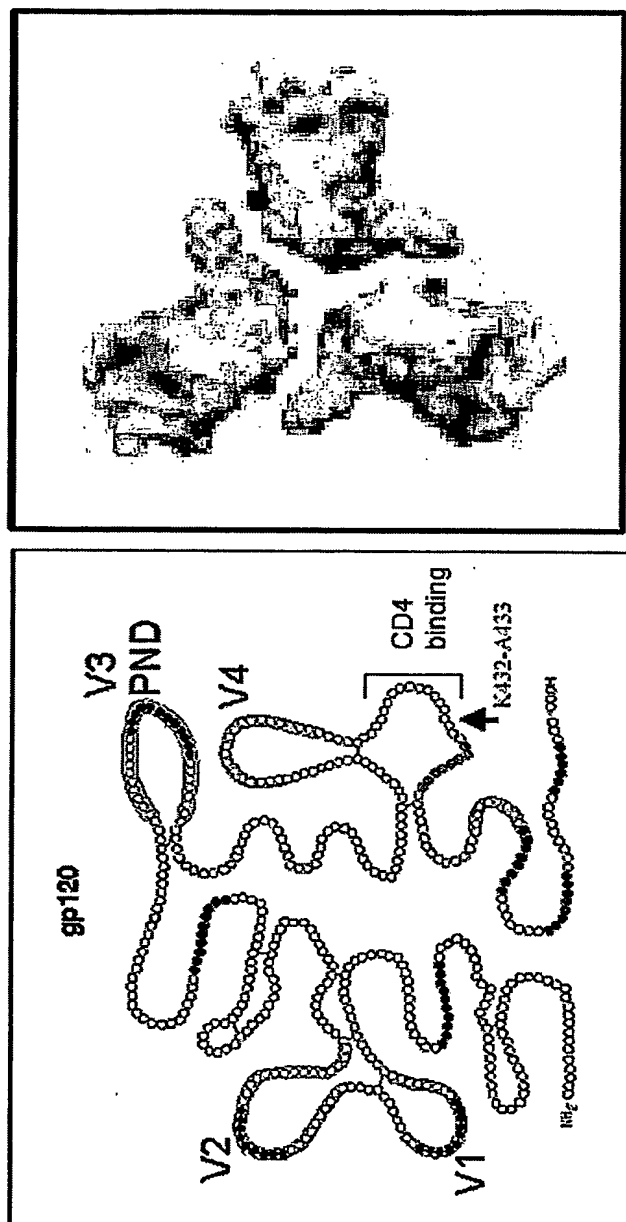


Figure 4

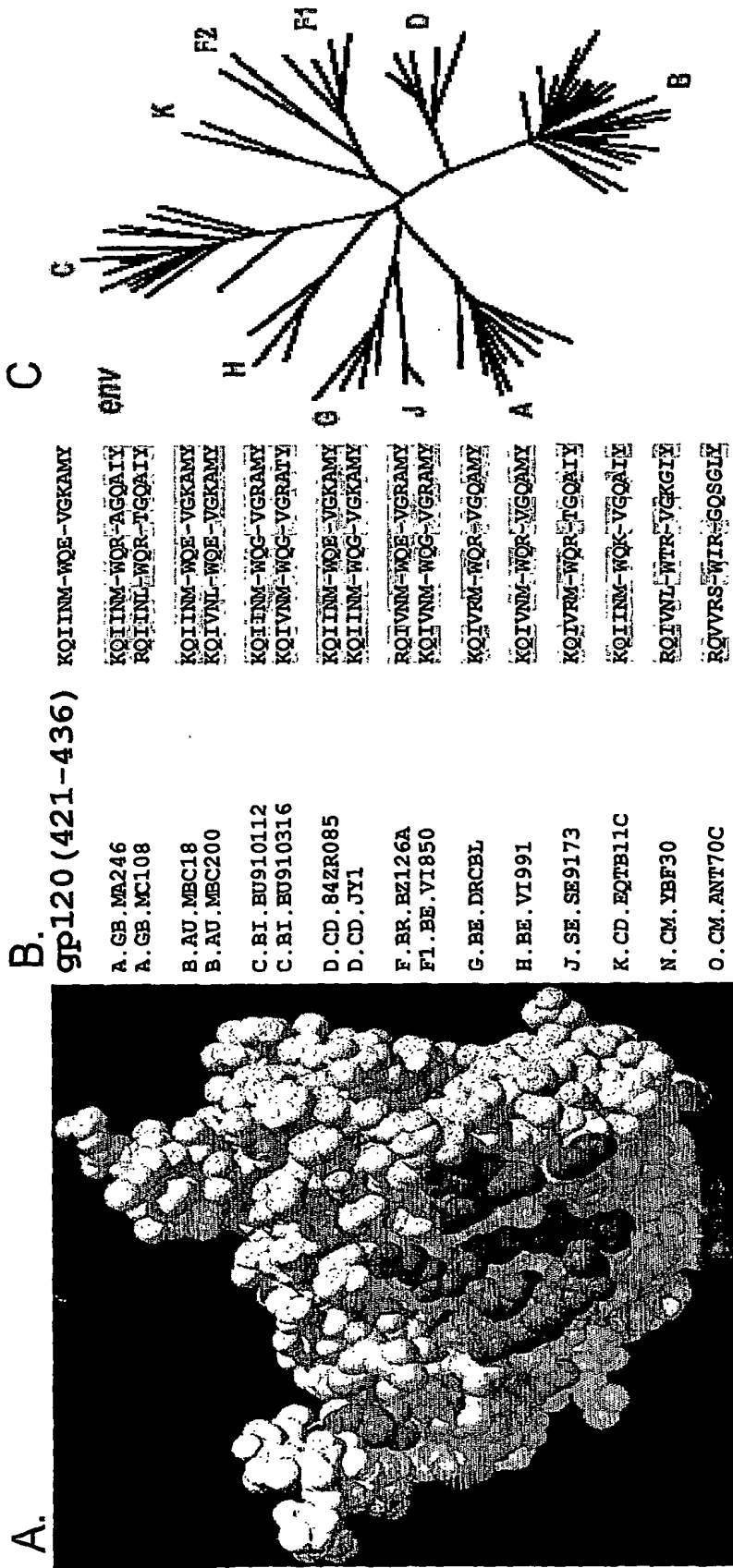


Figure 5

Fv variants with improved gp120 binding properties

- Affinity, avidity, cross-clade HIV neutralization
- Neutralizing potency consistent with immunotherapy use

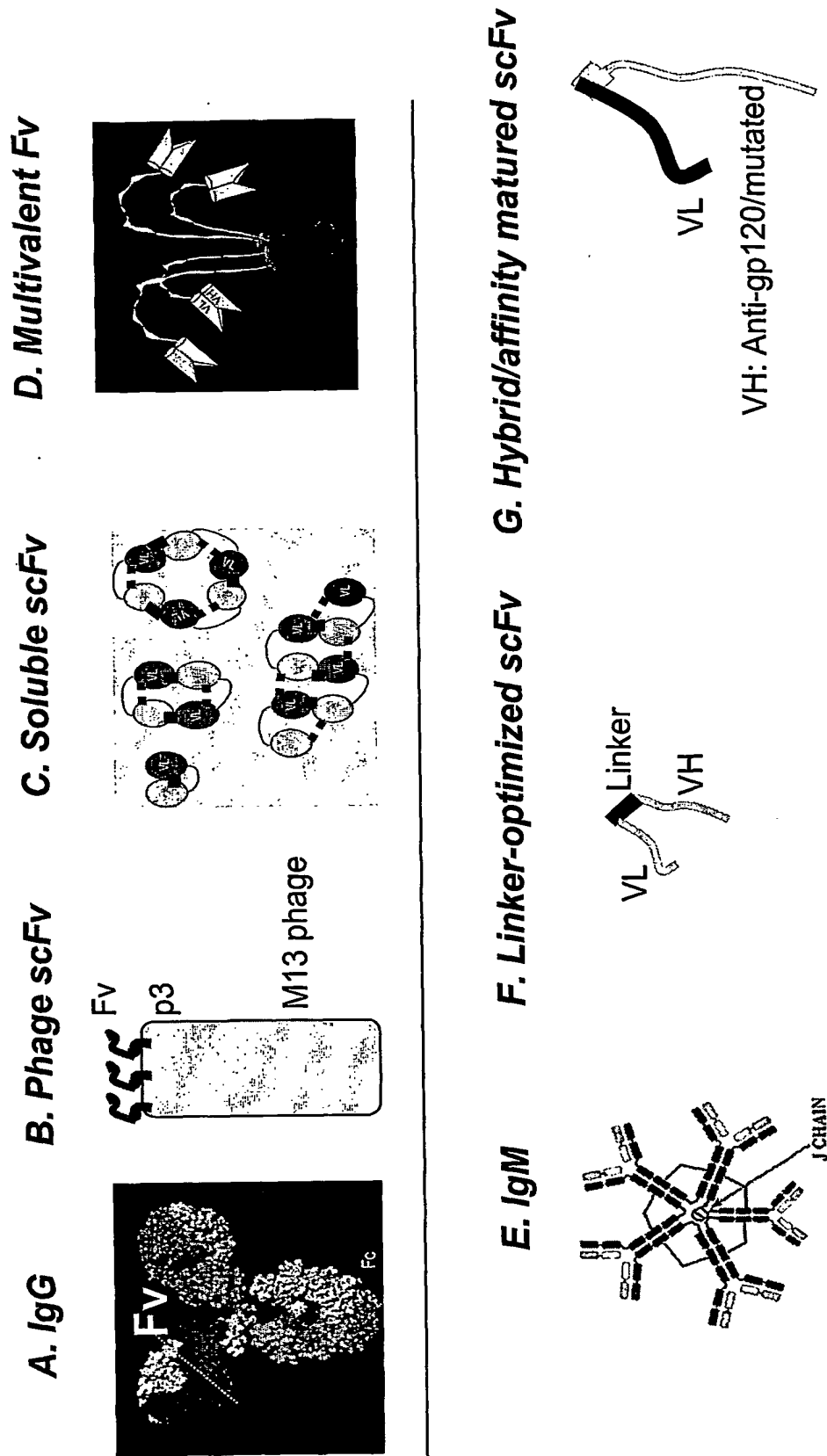


Figure 6

| Library | Vector | Source | Full-length Inserts, % | Size | Diversity % | Antibody expression, mg/L |
|---------|----------|---------------|---------------------------|-------------------|----------------|---------------------------------|
| L chain | pCT5his6 | PBL, lupus | 72 | 8.8×10^5 | 54 | ~ 2 |
| Fv | pHEN2 | PBL, lupus | 60 | 1.4×10^7 | 100 | ~ 3 |

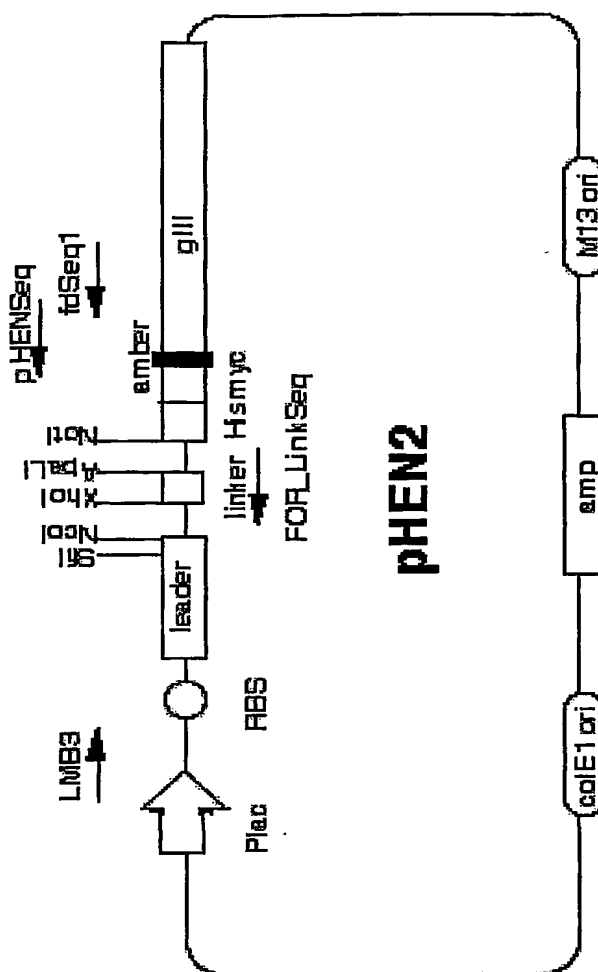
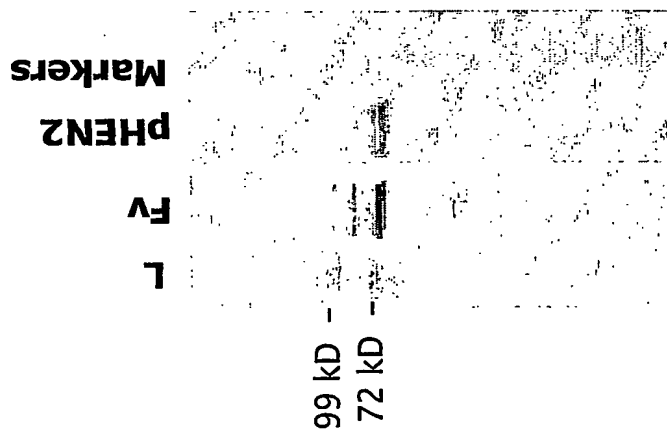


Figure 7

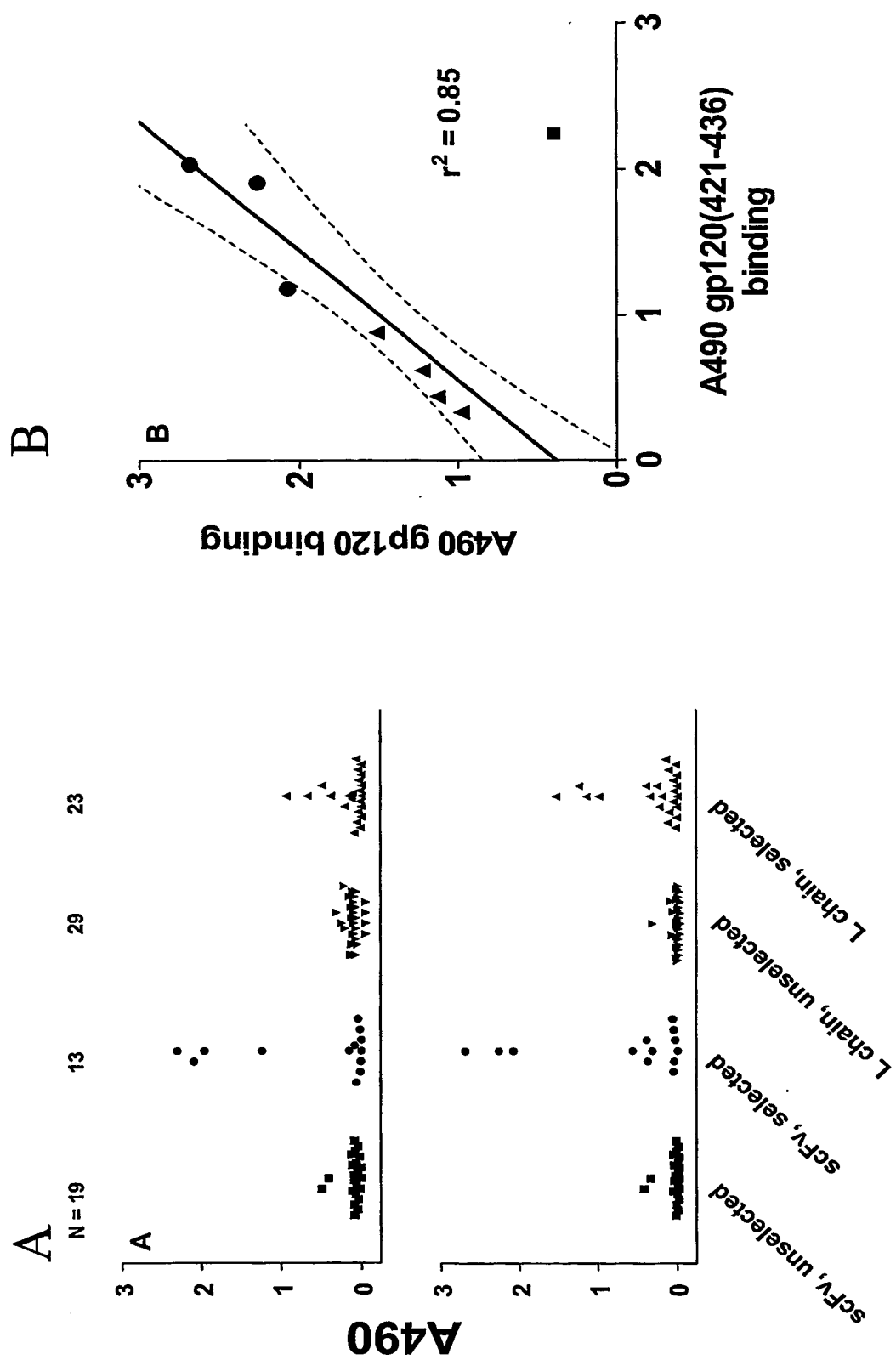


Figure 8

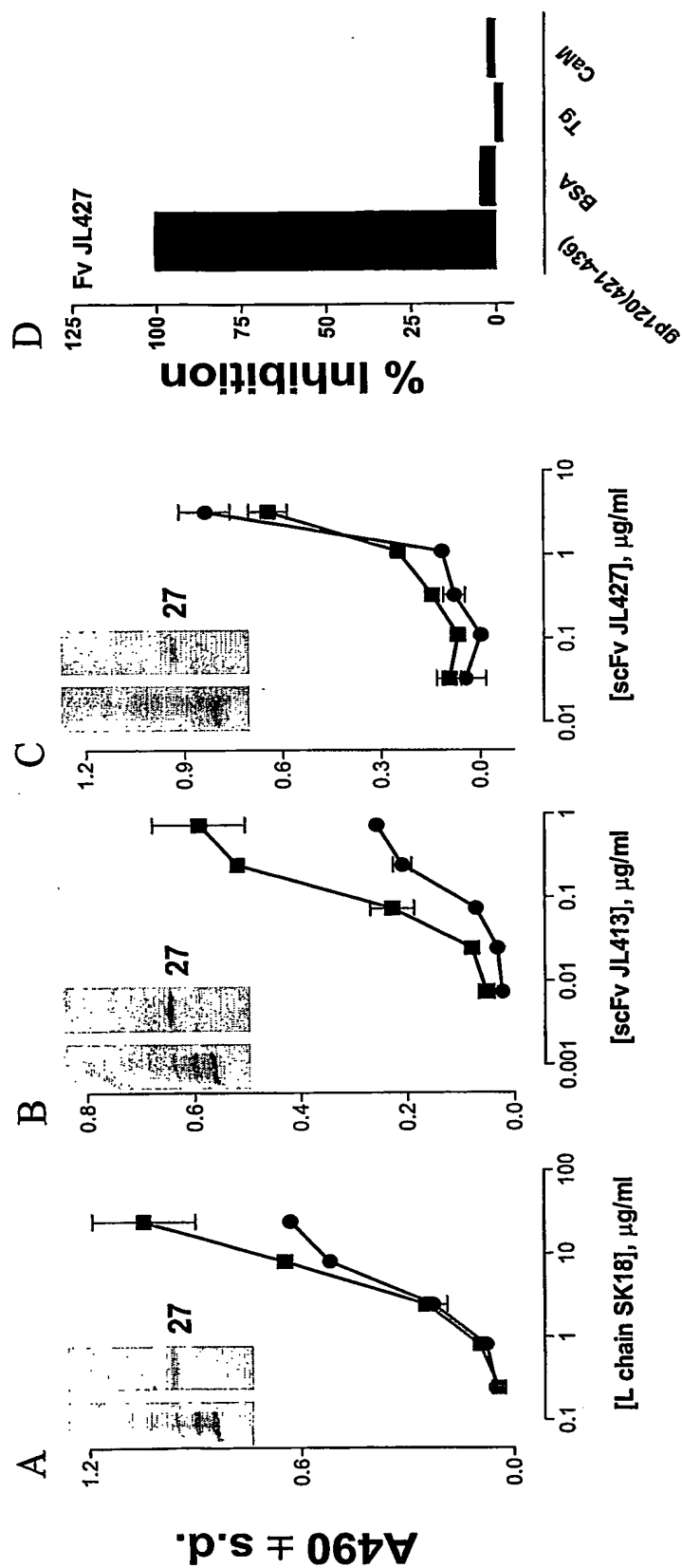


Figure 9

scFv JL413 VL domain
 1 ASP VAL VAL MET THR GLN SER PRO SER VAL SER ALA SER VAL GLY ASP ARG VAL THR
 21 ILE THR CYS ARG ALA SER GLN GLY ILE GLY ASN TRP LEU ALA TRP TYR GLN GLN LYS PRO
 41 GLY LYS ALA HIS ASN LEU LEU ILE TYR GLY ALA SER SER LEU GLN SER GLY VAL PRO SER
 61 ARG PHE SER GLY SER GLY SER GLY THR ASP PHE THR LEU THR ILE SER SER LEU GLN PRO
 81 GLU ASP SER ALA THR TYR TYR CYS GLN GLN ALA LEU VAL GLY THR PHE GLY GLY GLY THR
 101 LYS VAL GLU ILE LYS ARG

scFv JL413 VH domain
 1 GLN VAL ASN LEU ARG GLU SER GLY PRO GLY LEU VAL LYS PRO SER GLU THR LEU SER LEU
 21 THR CYS THR VAL SER GLY GLY PHE ILE SER SER TYR TRP SER TRP ILE ARG GLN PRO
 41 PRO GLY LYS GLY LEU GLU TRP ILE GLY PHE THR TYR TYR SER GLY SER THR TYR TYR ASN
 61 PRO SER LEU LYS SER ARG VAL THR ILE SER VAL ASP THR SER LYS ASN GLN PHE SER LEU
 81 LYS LEU SER SER VAL THR ALA ALA ASP THR ALA MET TYR CYS TYR CYS TRP GLY GLN GLY
 101 THR LEU VAL THR VAL SER SER

Figure 10 A

scFv JL427 VL domain

1 GLN SER VAL LEU THR GLN PRO PRO SER VAL SER GLY ALA PRO GLY GLN ARG VAL THR ILE 60

CDR1

21 SER CYS SER GLY SER SER SER ASN PHE GLY LEU ASN TYR VAL TYR TRP TYR GLN HIS PHE

41 PRO GLY THR ALA PRO LYS LEU LEU ILE TYR ARG ASN ASP GLN ARG PRO LEU GLY VAL PRO

81 ALA ARG PHE SER GLY SER LYS SER GLY THR SER ALA SER LEU ALA ILE SER GLY LEU ARG

101 SER GLU ASP GLU ALA ASP TYR TYR CYS GLN SER TYR ASP ASN SER LEU SER GLY TRP VAL

121 PHE GLY GLY TYR GLN LEU TYR VAL LEU GLY

scFv JL427 VH domain

1 GLN VAL GLN LEU GLN GLN SER GLY GLY GLY LEU VAL GLN PRO GLY ARG SER LEU ARG LEU 60

41 SER CYS ALA ALA SER GLY PHE THR PHE SER SER TYR GLY MET HIS TRP VAL ARG GLN ALA

61 PRO GLY LYS GLY LEU GLU TRP VAL SER TYR ILE GLY ARG SER GLY SER HIS THR ASN TYR

81 ALA ASP SER VAL LYS GLY ARG PHE THR ILE SER ARG ASP ASN SER LYS ASN THR LEU TYR

101 LEU GLN ILE ASN SER LEU ARG ALA GLU ASP THR ALA VAL TYR TYR CYS ALA ARG GLY LEU

121 PRO ASN TYR GLY MET ASP ILE TRP GLY GLN GLY THR THR VAL THR VAL SER SER

Figure 10 B

Light chain SK18 VL domain

1 ASP ILE GLN MET THR GLN SER PRO SER SER ILEU SER ALA SER VAL GLY ASP ARG VAL THR

21 VAL THR CYS ARG ALA SER GLN SER ILE SER SER TYR LEU ASN TRP TYR GLN GLN GLN PRO

41 GLY LYS ALA PRO LYS LEU LEU ILE TYR ALA ALA SER SER LEU GLN SER GLY VAL PRO SER

64 ARG PHE SER GLY SER GLY SER GLY THR ASP PHE THR LEU THR ILE SER SER LEU GLN PRO

81 GLU ASP PHE ALA THR TYR PHE CYS GLN GLN SER TYR SER ILE PRO ARG THR PHE GLY GLN

101 GLY THR LYS VAL GLU ILE LYS

Figure 10 C

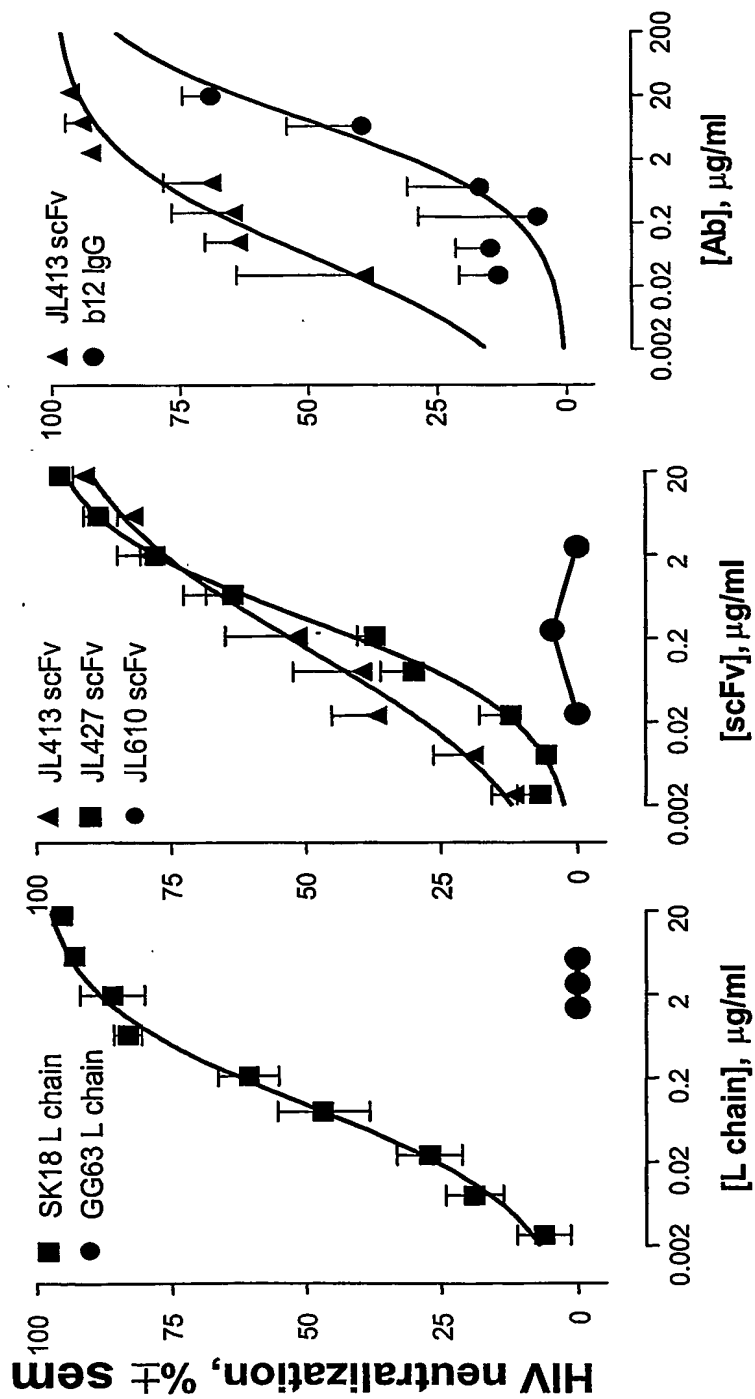


Figure 11

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